

CEREAL CO₂ Emission Reduction in roAd Lifecycles

a research project of the
cross-border funded joint research programme
“ENR2011 ENERGY – Sustainability and Energy Efficient Management of Roads”

1) Introduction

“ENR2011 ENERGY – Sustainability and Energy Efficient Management of Roads” is a trans-national joint research programme that was initiated by “ERA-NET ROAD II – Coordination and Implementation of Road Research in Europe” (ENR2), a Coordination Action in the 7th Framework Programme of the EC. The funding partners of this cross-border funded Joint Research Programme are the National Road Administrations (NRA) of Germany, Denmark, Ireland, Netherlands, Norway, Sweden and United Kingdom.

2) Project Facts

Duration:	01/10/2011 – 01/05/2013
Budget:	EUR 334.378
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3) Project Description

Enhanced reduction of CO₂ emission is crucial to modern society and for road administrations this is still an area for development. Some efforts are already made on computation of CO₂ emission to identify low CO₂ emission solutions in road constructions. CEREAL aims to build a model that can easily calculate the most important contributions of CO₂ emission and consequently guide a reduction strategy.

Most currently available national models focus heavily on the design or optimization of the use of materials. The tool to be developed in the CEREAL project will concentrate on maintenance and rehabilitation of in service roads since few new roads are built in Europe. Approximately 90% of the road construction works is maintenance and reconstruction of roads whereas only 10% of the work consists of building new roads. However, the tool will also be applicable to new roads, to assure full applicability.

CEREAL will be kept as simple as possible without loss of reliability and accuracy for gaining enough information to make the proper decisions. The dominant contributing aspects will be identified and included in the model.

The tool will be easy to use for non-experts, and with a friendly interface. We consider this condition very important, if we want to ensure a widespread use among European road authorities and contractors.

Furthermore, CEREAL will use and evaluate present available models and data and provide a complementary, harmonized European model, in line with the present developments on the European level.

Various efforts will be deployed to enhance widespread use. Platforms like CEDR, FEHRL and EAPA will be contacted at an early stage for inventories of the needs and wishes European wide. Based on this information the functional requirements will be formulated. In a later stage these organisations will be contacted for testing of the CEREAL tool. Close contact with the stakeholders is also needed to get a clear picture of design, maintenance and rehabilitation procedures among EU member states but also how tools as CEREAL should be embedded for a long life use after completion.

4) Expected Results

The project aims to achieve:

- A decision tool which is harmonized on the European level, which can show how NRA's - and contractors - can reduce CO₂ emission by making different choices in the design, construction, maintenance and rehabilitation phase of road life cycles.
- Development of a simple to use prototype software tool for computation of the CO₂ emission of a pavement construction and maintenance works.
- Embedment of the use of the tool CEREAL per European country for realisation of large scale application by users from NRA's and contractors at the end of the project but certainly years after completion of the project.
- Proper use of the tool CEREAL by providing training courses and tutorial material.